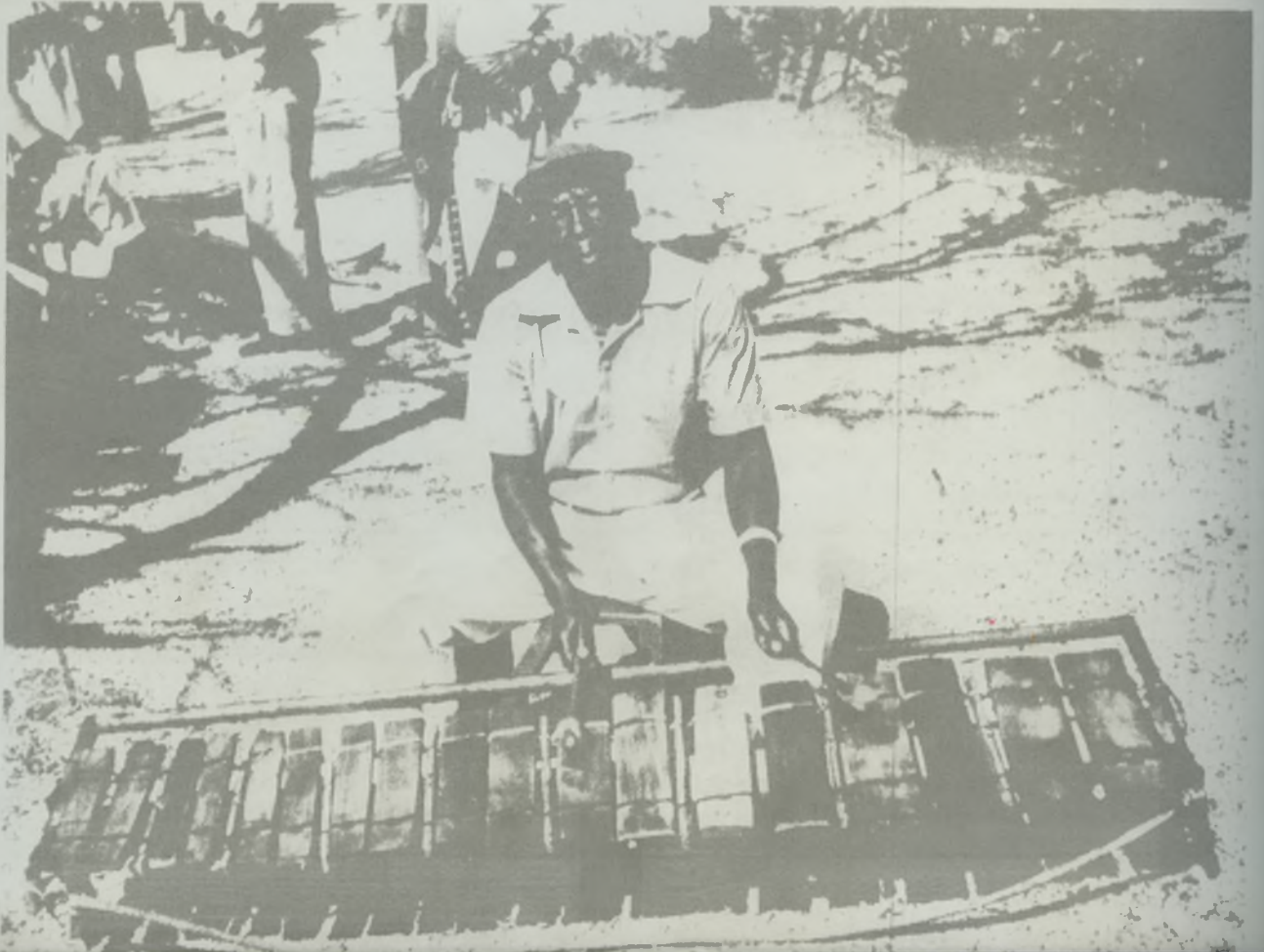


# How to Make a Tsongga Xylophone

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The leader of an orchestra from the Chopi tribe plays his xylophone



The Tsonga are a Bantu-speaking people numbering about 1,200,000 in Mozambique and 500,000 in the Northern Transvaal. They use the prefix Shangana (it derives from an ancient chief's name) to distinguish themselves from the Tsonga of Inhambane and the Tsonga of Zambia, and they live between the xylophone-playing Chopi to the south and the Venda, once famous for their xylophone playing, in the north. I know the Tsonga because I spent two years with them doing research under a grant from the Wenner-Gren Foundation for Anthropological Research.

In the same way that many Tsonga have retained the practice of worshipping ancestor-spirits, of marrying more than one wife, and of cultivating maize with the hoe, they hold fast

to ancient music traditions, such as the use of the friction-bow and of the shaman's shallow, round drum. A relatively newer practice is the playing of nine-slat xylophones, which are copied from or obtained by trading with neighboring peoples. Here are instructions for making a nine-slat xylophone like those used by the Tsonga.

### Construction material

Even though it may not be available to the Tsonga xylophone maker, I recommend the use of  $\frac{3}{4}$ " plywood for all wooden parts except the slats. The slats must be made of hardwood in order to obtain a good tone. The complete list of materials is as follows. All costs cited are approximate:

- Nine rectangular pieces of ebony or mahogany, in the following sizes:

11" × 3" ×  $\frac{1}{2}$ "  
 11" × 2 $\frac{3}{4}$ " ×  $\frac{1}{2}$ "  
 11" × 2 $\frac{1}{2}$ " ×  $\frac{1}{2}$ "  
 11" × 2 $\frac{1}{4}$ " ×  $\frac{1}{2}$ "  
 10 $\frac{3}{4}$ " × 2 $\frac{1}{4}$ " ×  $\frac{1}{2}$ "  
 10 $\frac{3}{4}$ " × 2 $\frac{1}{4}$ " ×  $\frac{1}{3}$ "  
 10 $\frac{3}{4}$ " × 2" ×  $\frac{1}{3}$ "  
 10 $\frac{1}{2}$ " × 2" ×  $\frac{1}{3}$ "  
 10 $\frac{1}{2}$ " × 1 $\frac{3}{4}$ " ×  $\frac{1}{3}$ "

Cost: \$2.25

- One 32" length of  $\frac{3}{4}$ " plywood, 2 $\frac{1}{2}$ " wide. This will bear the nine hollow fruitshell resonators that are suspended under the slats.

Cost (as scrap): \$.20

- Two lengths of  $\frac{3}{4}$ " plywood, each 11 $\frac{1}{2}$ " × 3". These provide the end-pieces from which the strung slats are suspended.

Cost (as scrap): \$.20

- Two lengths of  $\frac{3}{4}$ " plywood, each 7" × 3". These provide the legs, one on each end.

Cost (as scrap): \$.10

- One U-shaped piece of split rattan, or a 50" length of old chrome strip. This provides a resting-bar when playing in the standing position with the instrument against the stomach, also a prop when playing on the ground.

Cost (if scrap metal): nil

- Four lengths of  $\frac{3}{4}$ " plywood, 10 $\frac{1}{2}$ " × 1 $\frac{1}{2}$ ". These provide the separators between the pairs of slats.

Cost (as scrap): \$.20

- One small reel of copper wire, size 24. This is used to tie the separators and the fruit-shell resonators to the holes in the support-bar.

Cost: \$.34

- 200" of leather thong ( $\frac{1}{4}$ " nylon cord will do). This is later threaded through the slats and drawn tight to hold them in place.

Cost (if nylon): \$.50

- Fifteen to twenty gourds, large grapefruits, or small pumpkins, of various sizes, scooped out through a 1" hole and slowly oven-dried at a low temperature so they become hard. The shells will shrink to half-size during drying. After drying, they should measure from 3 $\frac{1}{2}$ " to 2 $\frac{1}{2}$ " in diameter.

Cost: \$.2

- $\frac{1}{2}$  lb. of putty, or freshly chewed chewing-gum. This is used to cement the mouths of the resonators to the holes in the support-bar.

Cost (if putty): \$.60

- Four rattan handles 15" ×  $\frac{1}{4}$ ". These are the beater-handles.

Cost: \$.40

- Four 1" spheres of rubber from automobile tires. These are the beater-heads.

Cost: nil

- One tube of "Weldit" cement.

Cost: \$.50

Total cost (if you are inventive): less than \$6.



### Tuning the slats

Round off the rubber spheres for the beater-heads, make a hole for the handles, and affix with "Weldit" cement. Cut a  $\frac{1}{2}$ " hole vertically through each slat, 2" from one end, as shown in Figure 1. Suspend the nine slats in order of size on a 48" length of string tied horizontally between two nails so that, in swinging, the slats touch neither each other nor any other object. Strike the slats one by one with a beater, arranging them now in order of pitch, lowest at the left, highest at the right.

Tune them against a piano or a chromatic pitchpipe (range  $E_7$  to  $E_8$ ), until they begin to match the right-hand column in Figure 2. If the tuning of a slat is higher than the desired pitch, lower the pitch by scooping out (with a

grinder or a rasp) the center of the underside, as shown in Figure 3, or by affixing putty or freshly chewed chewing-gum to the underside ends of the particular slat. To sharpen a slat, shorten it lengthwise or thin the ends.

The Tsonga today do not consider it necessary to tune their musical instruments very finely. So much tribal acculturation and migration have occurred that they hear very different tunings: Venda, Ndaou, Pedi, and so on. Under these circumstances stringent instrumental norms may have become muted, and variant slat-tunings are accepted. It is the rhythmic, percussive quality of xylophones that interests the Tsonga now, rather than a particular, exact tuning (vocal music norms remain strong, however).

Figure 1. The vertical hole through one end of the slat, the three-piece support-assembly, and the end-piece holes that receive the thong.

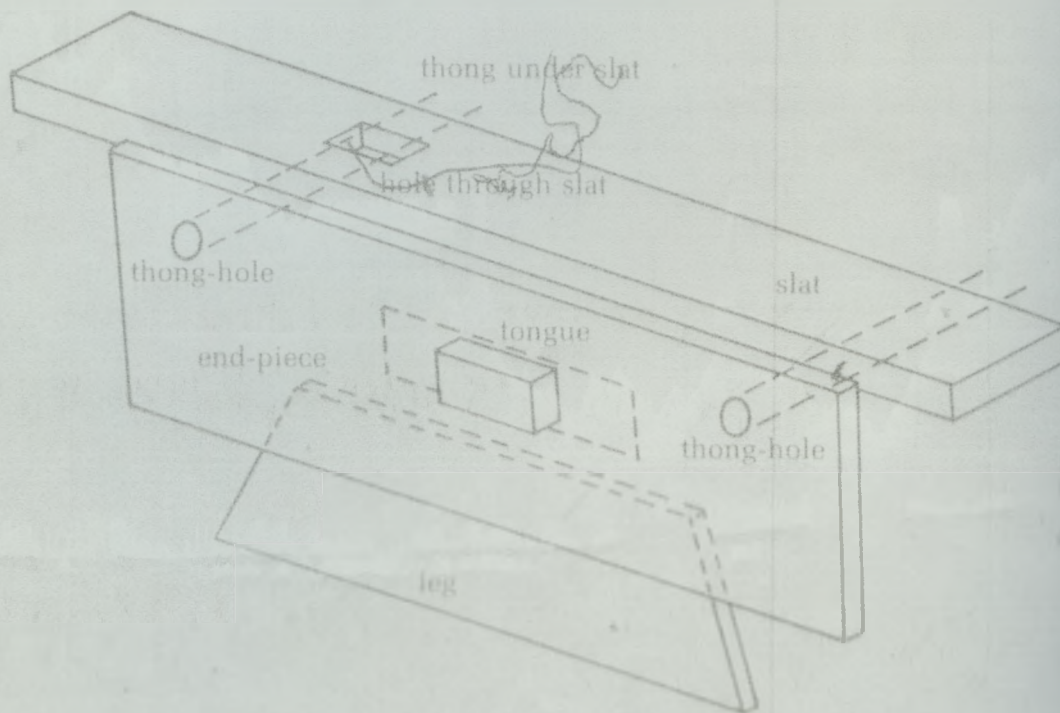
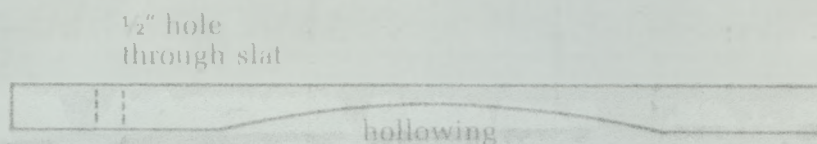


Figure 2. Tuning of a contemporary type of Tsonga xylophone (Tsonga xylophone tuning should not be thought of as an imperfect version of our own. It originally followed a highly logical design, all seven intervals being nearly equidistant.)

Western name of note	Hertz of Western note	Possible ancient Tsonga ideal (via the Chopi)	An ethnocentric description	Contemporary trend in some areas
E <sub>2</sub>	622.25	617.96		same as col. 3
D <sub>2</sub>	554.37	563.08	slightly sharp	same as col. 3
C	523.25	509.53	very flat	slightly flat
B <sub>2</sub>	466.16	461.08	slightly flat	same as col. 3
A <sub>2</sub>	415.30	417.23	slightly sharp	same as col. 3
G	392			insert and use it
G <sub>2</sub>	369.99	377.33	very sharp	slightly sharp
F	349.23	341.45	very flat	same as col. 3
E <sub>2</sub>	311.13	308.98		same as col. 3

Figure 3. Underside hollowing, which lowers the pitch of the slat



The author recommends the following recordings that feature African xylophone music: *African Xylophones* (GALP 1326) and *Timbila Xylophone Orchestra Dances* (TR-1, TR-2, TR-5, TR-6.) These

five recordings are available from International Library of African Music, P.O. Box 138, Roodepoort, Transvaal, South Africa. They can also be obtained on loan from some major U.S. universities.



### Assembling the xylophone

Bore nine 1" holes in the 32" support-bar, starting them 4" apart at the left (bass) end, and narrowing the spacing down to 3" apart at the right (treble) end. Add four small peripheral holes, wide enough to take wire, around each 1" hole, as shown in Figure 4.

Cut away the outside of the ends of the 32" support-bar, so as to form protruding tongues, which should then be passed through holes cut in the 11½" end-pieces, forming a three-piece support-assembly as shown in Figure 1. Add the legs and the U-piece, which can be bolted on.

Shape the separators as in Figure 5, affixing them with wire between pairs of 1" holes in the support-bar, as shown (the ninth slat lies on its own). Pass strips of thong through holes

in the separators (see Figure 5), all the way from one end-piece to the other, tying them at end-piece holes.

Lay the nine tuned slats across the thongs and over the holes, passing more thong in and over the slats through the slat-holes and twisting the thong between slats. The notches in the separators are designed to take and hold this extra binding-thong.

Blow across the tops of the fruitshell resonators in order to find one specimen to match each slat-pitch. Discard the rest. Bore four holes near the opening in each fruitshell, and bind each one to its appropriate hole, using wire and chewing-gum or putty as shown in Figure 6. Construction is then complete.

Figure 4. The spaced holes in the support-bar, with their peripheral holes for wire

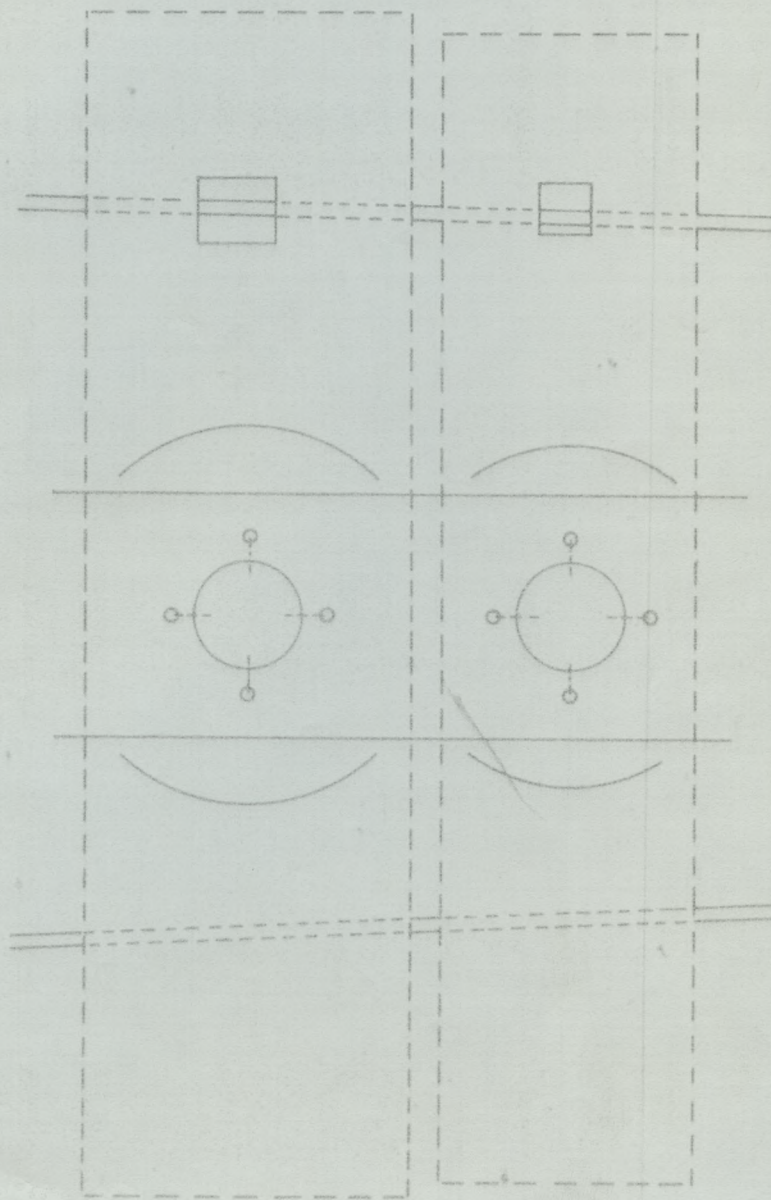




Figure 5. Final shape of separators, and wiring method

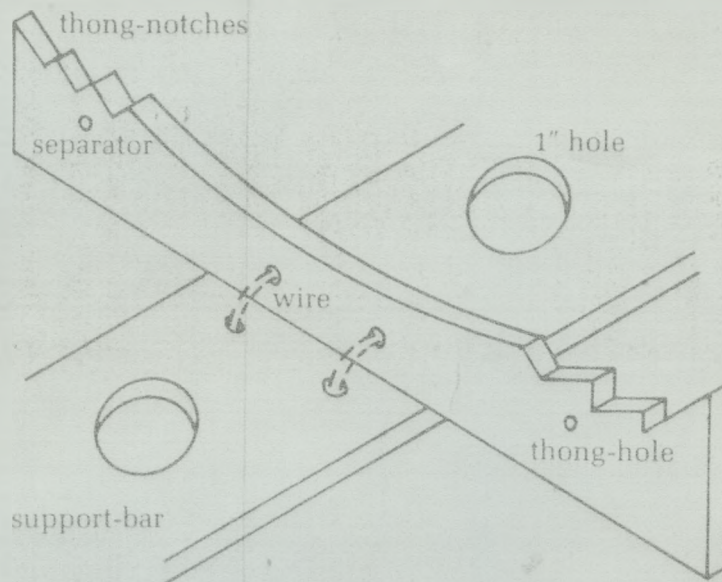
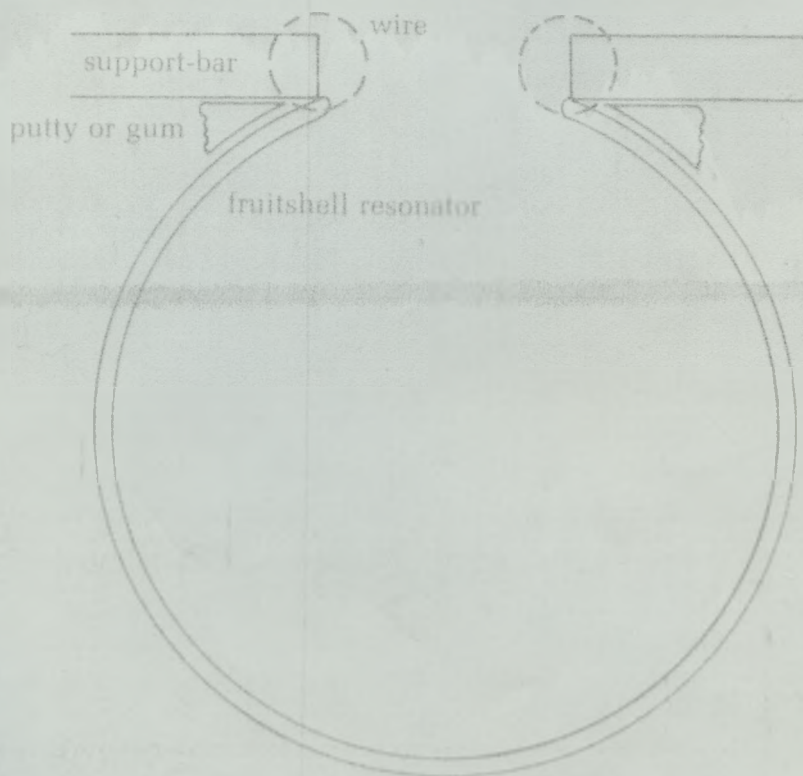


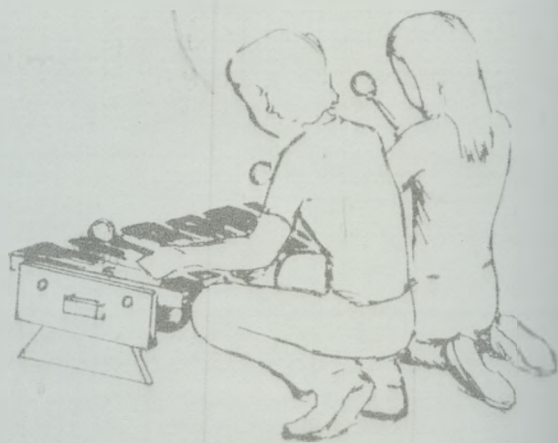
Figure 6. Method of wiring and cementing the resonators



### Playing the instrument

Two individuals squat side by side on the ground, facing the same side of the xylophone, each holding one beater in the left hand and another in the right. The left-hand man's "territory" encompasses the four left-hand slats, whether the instrument is laid normally or reversed. (Reversal of the instrument is optional in all tunes, with the left-hand man then playing the treble end. This custom parallels that among Tsonga, Venda, Ndaou, and Shona mbira-players, who alter the physical layout of "lamellae" or metal keys in order to play new tunes with old fingerings.)

In many Tsonga xylophone tunes, the two players appear to be engaged in producing crossrhythms of three-against-two, six-against-four, or twelve-against-eight, although there is rarely a triplet-style melody in either part. The Tsonga think of the two rhythms as one Tsonga rhythm possessing the desired qualities of tension and musical quality.



### Seven transcriptions of Tsonga Mohambi (xylophone) music

The seven transcriptions that follow are from tape recordings made by the author in the Northern Transvaal during the period 1968-1970. The first version of each tune shows what is apparently the players' way of thinking about the technical aspects of xylophone playing, for they explained that they refer to the location of a desired slat by counting inward from the end slats. The right-hand player counts from the uppermost slat, while the left-hand player counts from the lowermost. Within a given composition they coincide and interweave, using typical Tsonga polyrhythms involving three-against-two, four-against-six, and so on.

The second version of each tune shows it transcribed in conventional notation, maintaining the original character as closely as possible. The actual tunings, however, are not those of the Western staff, but are as shown in

the tuning chart. The key signature does not imply Western tonality; it is for convenience in reading. No barlines are shown, for the Tsonga generally conceive a composition first as a particular overriding numerical cycle of, for instance, 16, 24, or 32 pulsations. This fixed "grid," then, forms the basis for the melody and for the various interlocking parts, which are often derived from a call-and-response format.

These xylophone pieces only vaguely resemble the traditional beer songs that supposedly inspired them, except in the matter of rhythm. Possibly, it is the dance that determines the shape and form of a composition. In dance, rhythm is the most important element. For the Tsonga, then, the rhythmic characteristics of a composition may be the identifying criteria.



Tune 1. Hi swo swi vavisaku swikwembu (This is What Provokes The Gods)

R-h man: 1 . . . 4 . . . 3 . . . 4 . . . 1 . . . 4 . . . 3 . . . 4 . . . 1 . . . 4 . . . 3 . . . 4 . . .  
 L-h man: 4 . . . . . 1 . . . . . 3 . . . . . 1 . . . . . 4 . . . . . 1 . . . . . 3 . . . . . 1 . . . . .

♩ = 275

Cycle: 12-against-8

Transpos.: nil

r l r l r l r l r l r l

12-against-8

Tune 2. A langutani lexi taka ntonga ziya duma! (Watch Out For What Happens When There Is Lightning!)

R-h man: 3 . . . 1 . . . 4 . . . 2 . . . 5 . . . 3 . . . 4 . . . 2 . . . 3 . . . 1 . . . 4 . . . 2 . . .  
 L-h man: 4 . . . . . 1 . . . . . 3 . . . . . 1 . . . . . 4 . . . . . 1 . . . . . 3 . . . . . 1 . . . . .

5 . . . 3 . . . 4 . . . 2 . . . 3 . . . 1 . . . 4 . . . 2 . . . 5 . . . 3 . . . 4 . . . 2 . . .  
 4 . . . . . 1 . . . . . 3 . . . . . 1 . . . . . 4 . . . . . 1 . . . . . 3 . . . . . 1 . . . . .

♩ = 275

Cycle: 24-against-16

Transpos.: nil

l r l r l r l r l r l r

24-against-16

l r l r l r l r l r l r



Tune 3. Va Ta Dlaya Nhongani (They Will Kill Nhongani)

R-h man: 3 . . . . . 4 . . . . . 2 . . . . . 4 . . . . . 1 . . . . . 4 . . . . .  
 L-h man: 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . .

2 . . . . . 4 . . . . . 3 . . . . . 4 . . . . . 2 . . . . . 4 . . . . .  
 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . .

1 . . . . . 4 . . . . . 2 . . . . . 4 . . . . . 3 . . . . . 4 . . . . .  
 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . .

2 . . . . . 4 . . . . . 1 . . . . . 4 . . . . . 2 . . . . . 4 . . . . .  
 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . .

♩ = 300

Cycle: 24-against-64

Transpos.: nil

r l r l r l r l r l

24-against-64

r l r l r l r l r l

r l r l r l r l r l

r l r l r l r l r l



Tune 4. Ndzi ta byela mani? (To Whom Shall I Relate It?)

R-h man: 4 . . . . 1 . . . . 3 . . . . 1 . . . . 4 . . . . 1 . . . . 3 . . . . 1 . . . .  
 L-h man: 3 . . . 1 . . . 4 . . . 1 . . . 5 . . . 1 . . . 4 . . . 1 . . . 3 . . . 1 . . . 4 . . . 1 . . .

4 . . . . 1 . . . . 3 . . . . 1 . . . . 4 . . . . 1 . . . . 3 . . . . 1 . . . .  
 5 . . . 1 . . . 4 . . . 1 . . . 3 . . . 1 . . . 4 . . . 1 . . . 5 . . . 1 . . . 4 . . . 1 . . .

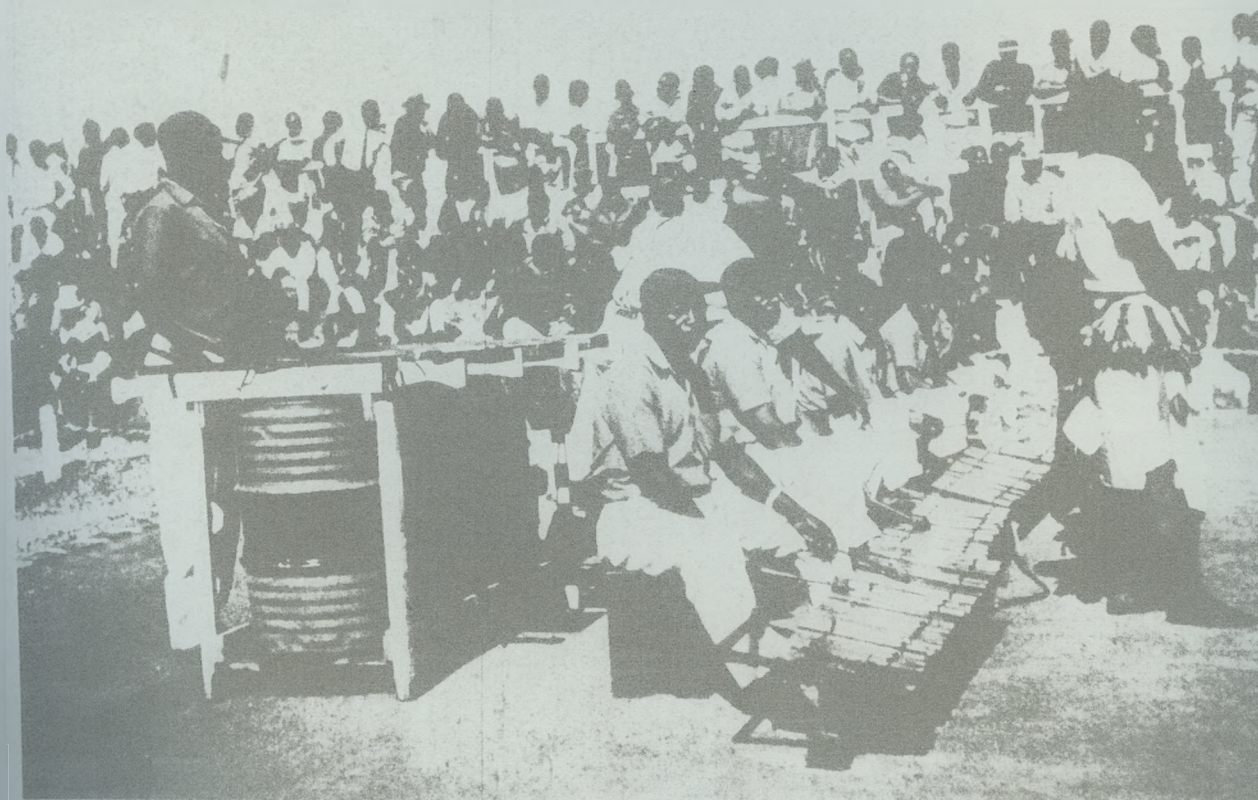
♩ = 175

Cycle: 16-against-24

Transpos.: nil

16-against-24

The musical score consists of two systems, each with a treble clef staff and a bass clef staff. The key signature has two flats (B-flat and E-flat). The top staff of each system contains a melodic line with notes beamed in pairs, and the bottom staff contains a bass line with notes beamed in pairs. Above the top staff, there are rhythmic markings: a vertical bar, 'r', a vertical bar, 'r', a vertical bar, 'r', a vertical bar, 'r'. Below the top staff, there are rhythmic markings: 'r', a vertical bar, 'r', a vertical bar, 'r', a vertical bar, 'r', a vertical bar, 'r', a vertical bar, 'r', a vertical bar, 'r'. The first system is labeled '16-against-24'.



An orchestra from the famous xylophone-playing Chopi tribe prepares to play at one of the large Johannesburg gold-mine compounds.



Tune 5. Mhan' Manana (Mother)

R-h man: 1 . . . 4 . . . 3 . . . 4 . . . 1 . . . 4 . . . 3 . . . 4 . . . 1 . . . 4 . . . 3 . . . 4 . . .  
 L-h man: 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . .

♩ = 200

Cycle: 12-against-16

Transpos.: nil

r l r l r l r l r l r l

12-against-16

r l r l r l r l r l r l r l

Tune 6. Salanini (Goodbye)

R-h man: 3 . . . 1 . . . 4 . . . 2 . . . 5 . . . 3 . . . 4 . . . 2 . . . 3 . . . 1 . . . 4 . . . 2 . . .  
 L-h man: 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . .

5 . . . 3 . . . 4 . . . 2 . . . 3 . . . 1 . . . 4 . . . 2 . . . 5 . . . 3 . . . 4 . . . 2 . . .  
 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . .

♩ = 200

Cycle: 24-against-32

Transpos.: nil

l r l r l r l r l r l r

24-against-32

r l r l r l r l r l r l r l





The headman at Langutani plays his xylophone for a crowd while his two wives sing.

Tune 7. Nwananga (My Child)

R-h man: 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . .  
 L-h man: 3 . . 1 . . 4 . . 1 . . 5 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . .

4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 3 . . 1 . .  
 5 . . 1 . . 4 . . 1 . . 3 . . 1 . . 4 . . 1 . . 5 . . 1 . . 4 . . 1 . .

♩ = 200

Cycle: 32-against-24

Transpos.: nil

l r l r l r l r l r l r l r

24-against-32

r l r l r l r l r l r l

l r l r l r l r l r l r l r

r l r l r l r l r l r l